

## **Attachment 2. Proposed DWTF Bulking/Drum Rinsing Station**

The Waste Management Division at Lawrence Livermore National Laboratory proposes to reconfigure liquid waste delivery equipment ancillary to the Tank Farm (Unit #19) in Building 695. In addition to stinging, a new skid-mounted bulking station would be used to deliver liquid wastes from containers. The bulking station would consist of an open pan connected to existing piping in the Tank Farm system. Containers with liquid wastes would be dumped into the pan using drum dumpers. Liquid wastes would then be pumped from the pan to the Tank Farm. The bulking station would also be used for drum rinsing and equipment decontamination.

### **A. Process and Equipment Description**

The Bulking Station is an ancillary piece of equipment that is simply a stainless steel pan. The overall dimensions of the pan are approximately 10' long by 5' wide by 26" deep with a capacity of approximately 700 gallons. The bottom of the pan is sloped towards a 2" drain that is connected to a double-diaphragm air-powered pump. There also is a stainless steel screen just before the drain to prevent solids (e.g., broken glass, paper products) from entering the drain and clogging the line to the pump. This screen is connected to a long handle so that the screen can be removed, cleaned and replaced easily while the bulking process is taking place. The pan sits on a support structure constructed of mild steel box tube that is powder coated black. The support structure raises the pan approximately 19" so that the top of the pan is about 45" above the floor. The support structure has forklift pockets so that the station can be moved about easily.

The Bulking Station is required because the tanks associated with the Tank Farm in DWTF are closed-top tanks and the stinging of wastes is not efficient and increases the possibility of worker contamination. Therefore, the Bulking Station will serve as the entry point for addition of most liquid wastes into the Tank Farm. Basically, any type of waste stream that can be processed through the Tank Farm may first pass through the Bulking Station.

Waste containers of 85-gallons, 55-gallons, and 30-gallons will be dumped into the pan with the use of drum dumpers. Smaller containers ranging from 5-gallon carboys to 1-quart containers will be manually poured into the pan. The wastes, after being bulked into the pan, will then be pumped into the Tank Farm. The pump is connected via flexible hoses to any of the feed inputs on the hard-piped stainless steel waste transfer lines located in the Liquid Waste Processing Area (LWPA) (Room 1028) or the Air Lock (Room 1027). The waste transfer lines run along the west wall of B695. When the waste enters these waste transfer lines, the waste can be routed to any one of the nine tanks by opening and closing valves on that line. All connections from the drain to the pump and then from the pump to the waste transfer line are quick-disconnect couplings.

It is important to note that the Bulking Station will not be used for storage of wastes and will be empty when not in use. Personnel will be present at all times during the bulking process.

## **B. Justification for Equipment Use**

The Health Risk Assessment (HRA) for Hazardous and Mixed Waste Management Units at Lawrence Livermore National Laboratory (LLNL, 1997) assumed all wastes intended for the Tank Farm would be transferred by stinging the waste into 5,000-gallon tankers from smaller containers. A stinger is a metal or hard plastic tube connected to a typical 3" diameter waste hose that is connected to a waste pump. The stinger is manually inserted into a drum of waste and while the stinger is being held upright the pump pulls the waste through the stinger to the receiving waste management unit. The operator then has to manually tilt the drum to one side in order to remove as much of the waste as possible.

The stinging of wastes poses many significant problems to the operator. First, liquid waste drums usually contain some form of solid debris. In some instances the solid material clogs the waste transfer line resulting in the operation being shut down, while the operators try to remove the solid material. Unclogging waste transfer lines and/or hoses inherently results in small spills of waste and requires the decontamination of equipment used in the unclogging activities.

Second, stinging itself poses contamination issues. While stinging, the stinger is submerged in the waste and when the operator removes the stinger to insert it into the next drum, waste is dripping from the stinger. Normally these drips are accounted for by pre-planning activities involving contamination control, but it is still a worker concern. Also the operator has to be consciously aware of where he places the stinger so as not to contaminate any other equipment and/or drums.

Third, the stinging of wastes is not the most efficient way to transfer wastes and requires more physical effort compared to the use of the Bulking Station. During bulking into the Bulking Station, the drums are placed into one of the drum dumpers and the drums are dumped. It is quicker and easier compared to stinging, and any solid material is prevented from reaching the waste transfer lines by screens inside the station. Also, the controls for the drum dumper are on a tether so that the operator can be standing 2-3 feet away from the Bulking Station during the dumping activity. Stinging requires the worker to be standing right next to the drum, some of which are open top drums.

It is anticipated that the Bulking Station will also be used as the catch basin when operators decontaminate waste handling equipment. Contaminated equipment will be placed inside the pan and then decontaminated using pressure washers, wet wipe or other approved decontamination methods. The Bulking Station would be the most appropriate place for decontamination activities because it collects all wash water and provides easy transfer capabilities. Also, the station itself provides contamination control by containing all decontamination residues. An example of the type of equipment to be decontaminated would be drum dollies with external contamination, flexible hoses, and portable pumps used in waste transfer processes.

It would also be advantageous for operators to rinse drums in the Bulking Station. After being emptied the drums are in the perfect position for being rinsed (tilted and lids/bungs removed). The wash water would then be collected and transferred in the same manner as the waste. Though there currently is a permitted unit to be used solely for drum rinsing (Drum Rinse Station), the use of the Bulking Station for rinsing drums would be much more efficient and require less waste handling than the use of the Drum Rinse Station. It would be much more labor intensive for the operators to remove the drum from the Bulking Station, reapply the lid or bung, transfer to the Drum Rinse Station, remove the lid or bung, place into a drum dumper and then rinse the drum.

### **C. Emissions and Public Exposure**

In review of the Health Risk Assessment, the assumption was made that all wastes would be transferred to the Tank Farm through pumping out tanker trucks. It was further assumed that wastes from smaller containers (e.g., 55-gallon drums) would be transferred to the tanker truck through a vacuum suction line (stinger). It is stated in the HRA (page II-22) that the air displaced from the filling operations contains volatile organic compounds in gaseous or vapor form and is dispersed directly to the atmosphere from the top of the tanker truck, without emission control. This new operation as proposed does not invalidate the assessment of risk because the drums of wastes would be dumped into the Bulking Station as opposed to all wastes being transferred from trucks after being transferred from smaller containers. Whether the waste is being dumped into the Bulking Station or pumped into an open tanker truck, the emissions from either method would not be significantly different. Therefore, the emissions generated as a result of the use of the Bulking Station are already accounted for in the HRA, and this new bulking activity poses no new risks to the public.

The HRA did not distinguish between CC-rule regulated emissions from the term emissions, but the RCRA permit does. The permit states that waste requiring Container Level II Controls under the CC-rule will be transferred in such a manner as to minimize the exposure of the waste to the atmosphere (Volume I, Part IV, page 16). In order to meet the requirements of the CC-rule, Waste Management Division will not use the Bulking Station for wastes requiring Container Level II Controls, and will sting these waste instead. This will meet the requirements of the rule and will decrease overall emissions below those assumed in the HRA.

The emissions due to the rinsing of drums will be insignificant since the rinsing of drums would only occur after the drums were empty. Furthermore, during the rinsing operation any residual waste left in the container will be substantially diluted with water, which will then significantly reduce any possible emissions. Also, during rinsing, surfactants and/or detergents may be used which would further reduce emissions.

Decontamination of equipment through the Bulking Station would also add negligible amounts of VOCs to the atmosphere. Any equipment requiring decontamination would not contain volumes of waste material comparable to the bulking/transfer of wastes, and

therefore the emissions generated as a result of decontamination operations would be insignificant.

For these reasons, it does not appear that emissions from bulking, decontamination or rinsing at the bulking station would require capture through the POGS to meet the assumptions of the HRA.

#### **D. Emissions and Worker Safety**

Waste Management Division submitted a formal design package on the Bulking Station to Hazards Control's Environment, Safety and Health (ES&H) Team 4 for review. Team 4 supports operations at all Waste Management Division facilities. The design package was reviewed by several members of Team 4 for industrial hygiene, industrial safety, fire protection, health physics, pressure safety and environmental concerns. Neither the Industrial Hygienist nor the Industrial Safety expert had any significant concerns with the use of this equipment.

Furthermore, it is proper protocol for Waste Management Division to submit to Team 4 a processing plan before any waste processing is conducted, including bulking into the Bulking Station. The processing plan includes descriptions of the activity, the equipment to be used, the waste type, requisition number, volume and the sequence of events that will take place during the activity, when applicable. Team 4 reviews the processing plan for industrial hygiene, health physics, and if required, criticality. The plan is also reviewed by a Waste Management Division chemist or process engineer. The Industrial Hygienist will prescribe the proper PPE, and may suggest alternative methods for handling certain waste streams, if warranted. Typically, PPE will include Tyvek coveralls, gloves, and a face shield. The Industrial Hygienist may state that respirators are required for workers in the immediate vicinity depending on the waste stream and if worker exposure due to inhalation is a concern. Further discussions of processing plans can be found in the permit application (Vol. 1, Part VI, Section 2.1.4). It is important to mention again that a processing plan is proposed to Hazards Control for all of our waste operations not just for the Bulking Station. The addition of the Bulking Station will not require any new administrative requirements. In terms of CC-rule compliance, all wastes are screened. The question of whether the waste is CC-rule regulated waste or not is answered before the waste is brought into the TSDF.

#### **E. Operations Allowed Under Permit**

Bulking is mentioned in several places throughout the permit application. Volume 11, Part XIV.4, Section 1, page 2 of the permit application addresses bulking in the B695 S/TUG: "Other handling operations that are conducted within the Building 695 S/TUG include lab packing, overpacking, bulking..." Volume I, Part VI, Section 2.4.1, page 16 which discusses waste transfer operations does state "Other equipment may be used as long as the alternate equipment does not result in the release of hazardous waste or injury. Decontamination of process equipment is specifically discussed in Vol. 1, Part VI, Section 2.6.1, page 26. This section states: "Waste handling equipment (e.g., forklifts,

dollies), floor surfaces, containers, tanks, treatment devices, and other ancillary equipment are decontaminated as required to maintain clean work areas, to optimize treatment performance, to prevent incompatible reactions, and to remove spilled materials...Techniques used by HWM include wet wipe, detergent wash, caustic wash, acid wash, hydroblasting, and steam cleaning.” It is not mentioned where these decontamination activities would take place, but the Bulking Station is the most practical and safest location for decontaminating smaller process equipment.

Drum rinsing is currently permitted through the use of the Drum Rinse Station, which is a miscellaneous unit (Vol. 11, Part XIV.4-P) and through language in the permit application such as “A container-rinsing station is provided in the Liquid Waste Processing Area (LWPA)” (Vol. 1, Part VI, Section 2.6.1, page 26). The Drum Rinse Station, at this point in time, has not been designed nor built.

## **F. Ancillary Equipment**

The Bulking Station meets the definition of ancillary equipment. The definition of ancillary equipment, per 22CCR 66260.10, is:

*“any device including, but not limited to, such devices as piping, fittings, flanges, valves and pumps, that is used to distribute, meter or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal onsite, or to a point of shipment for disposal offsite.”*

The Bulking Station meets this definition because its main purpose will be distributing hazardous waste to a storage/treatment tank. Though the Bulking Station, taken as a whole, is not explicitly mentioned as a device in the above definition, it serves as the primary delivery system to get waste into the Tank Farm from drums and smaller containers. The definition allows for further equipment identification with the language *“any device including, but not limited to...”*

Though this equipment was not previously discussed in regards to the Tank Farm, Volume 11, Part XIV.4, Section 6.1.1, page 23 provides language stating that types and locations of ancillary equipment related to the Tank Farm may be modified for final installation and during the operating life of the Tank Farm. The addition of the Bulking Station is a modification to the tank system during final installation and will be included in the final Engineering Assessment of the Tank Farm.